VIDEOFICHE JOINT VENTURE

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VIDEOFICHE JOINT VENTURE
GENERAL AUTOMATION/CORRELATIVE SYSTEMS INTERNATIONAL S.A.
SUPPORTING MATERIAL FOR THE BUSINESS PLAN

Prepared For:
GENERAL AUTOMATION

JANUARY 1980

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INTRODUCTION

INTRODUCTION

- This report was prepared by INPUT for General Automation, covering the proposed VIDEOFICHE joint venture between General Automation and Correlative Systems International S.A.

  - It is bound separately from the business plan and is intended to be used as supporting material for in-depth discussions with prospective funding sources who have first read the business plan itself.

- In-depth interviews with knowledgable vendors and potential users were conducted. Those interviewed were:

<u>On-site</u>

- Correlative Systems International S.A. (CSI).
- Credit Commercial de Belgique (CCB).
- British Airways.
- Zytron.

<u>Telephone</u>

- State Farm Insurance.

- Insurance Institute for Research.
- IBM, Data Processing Division.
- IBM, General Business Group.
- U.S. General Accounting Office.
- State of California: Employment Development Department.
- Bank of America.
- Microform Data Systems.
- Cogor (ICL).

- INPUT wishes to note that CSI was most cooperative in supplying necessary information, and that we were impressed by the technical competence and candor of the organization's representatives.

- Special emphasis was given to the State Farm Insurance and the Insurance Institute for Research interviews; they were combined into a case study of competing systems approaches to solving the common paperwork problem.

I SYSTEMS AND MARKET ENVIRONMENT OF VIDEOFICHE IMAGE PROCESSING SYSTEM (VIPS)

I SYSTEMS AND MARKET ENVIRONMENT OF VIDEOFICHE IMAGE PROCESSING SYSTEMS (VIPS)

A. TECHNICAL CHARACTERISTICS

- The technical evaluation of CSI's VIDEOFICHE system was accomplished by an on-site review of CSI, a review of available documentation, further interviews with the Borrey brothers, and a review of currently available image processing systems. The system is assumed to function according to the documentation, the assertions of the system developers, and to what INPUT witnessed in Belgium.

  - Detailed evaluation of any specific implementation of VIDEOFICHE was not possible because of the state of development of the system and the time constraints of the study. This qualification of the technical research is not considered to be a severe limitation on its value.

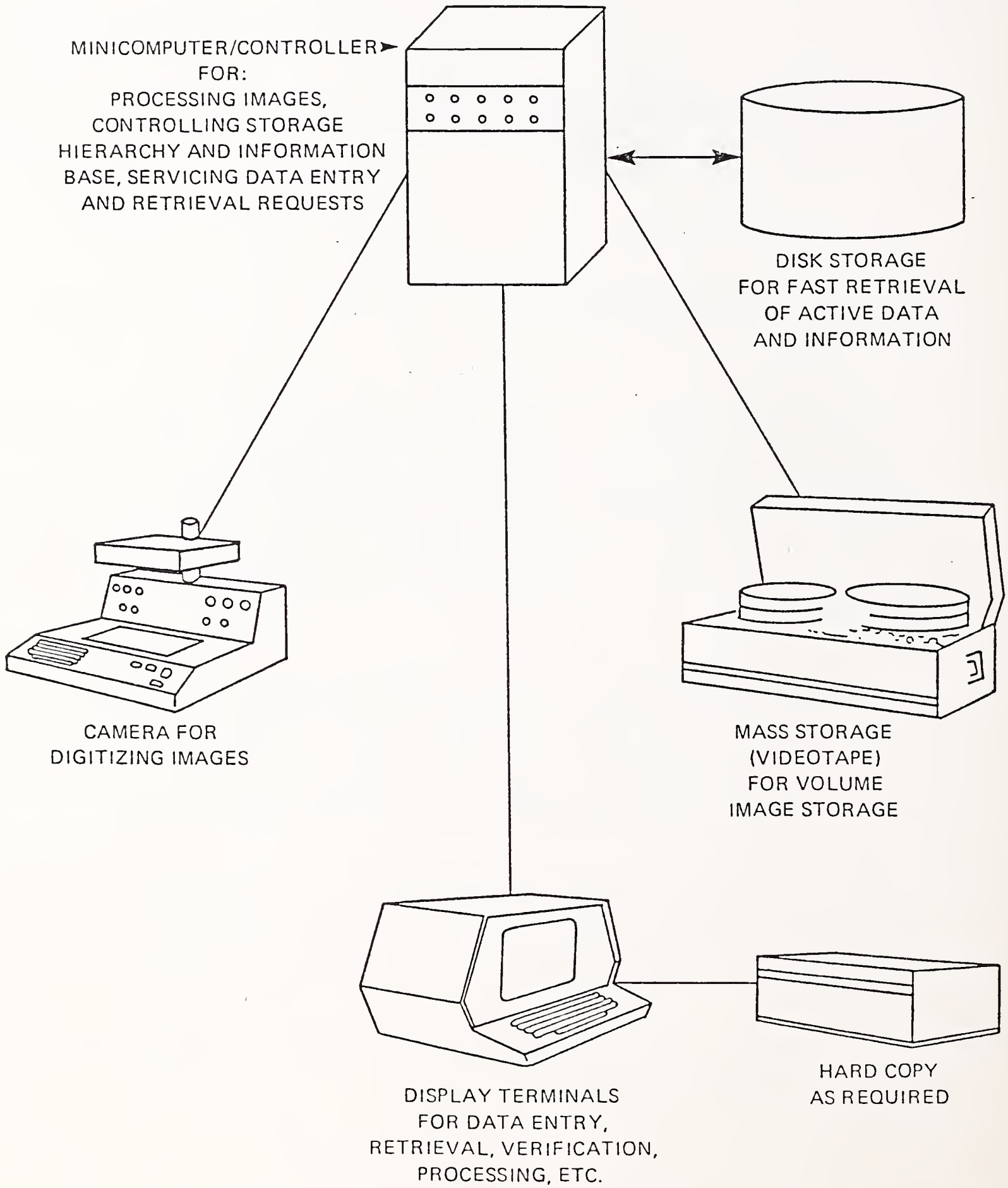
- There is no specific (or unique) product associated with VIDEOFICHE at this time. It is a systems concept and solution to a broad applications set. A general systems diagram is contained in Exhibit I-1. The system provides for:

  - Document and/or data entry, identification, association (indexing), compression, and storage.

EXHIBIT I -1

SYSTEMS DIAGRAM

VIDEOFICHE IMAGE PROCESSING SYSTEM (VIPS)



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- Simultaneous retrieval of both data and images (documents including graphics) by multiple users.

- Easy update of both data and image storage.

- Character recognition capability.

- Interface with other systems via communication lines.

- The system (both hardware and software) is modular in design and can accommodate change. This facilitates:

  - Custom tailoring to satisfy the requirements of specific applications.

  - Relatively easy integration of new technology.

  - Replacement of specific systems components with more cost effective or higher performance substitutes.

- The systems design concept is unique in its integration of classic data processing systems with image processing and micrographics. Past interfaces between such systems have been clumsy at best and non-existent in most cases.

- VIPS has a primary objective of reducing paper flow within offices with consequential savings in personnel costs. However, the unique value associated with the system (document reading, storage, and retrieval) depends upon the continued use of paper documents for inter-organizational communications. This assumption, that paper will remain a primary intra-company communications medium, is clearly stated in CSI documentation, and INPUT accepts this basic premise. However, paper flow will eventually be impacted by electronic media; timing of this impact will be analyzed later.

B. GENERAL OBSERVATIONS

- The use of paper in current business systems is a major contributor to the overall expense of office operations.

  - The annual personnel costs of office employees (white collar workers of all categories) are over $700 billion in the United States.

  - Only $62.5 billion is spent on data processing products and services, all communications services (voice, message, mail, and courier) and office products (copiers and typewriters) to support these employees.

  - The personnel costs associated with communications and with producing, handling, storing, and retrieving paper documents are over $120 billion annually. (This figure does not include the analysis and processing time of the paper documents which is considered productive, but could be substantially improved by the VIPS system.)

- It is apparent that any improvement (or reduction) in paper flow has the potential for billions of dollars of savings.

- Data processing and micrographics systems have not solved the paper problem; it is growing each year in all areas of the economy. In fact, a good argument can be made that installed data processing systems have been primary contributors to the enormous increase in paperwork.

- Office products being touted as harbingers of the "office of the future," such as intelligent copiers and communicating word processing systems, merely speed the creation and transmission of paper documents and do not solve the basic paper handling problem. (Even intelligent copiers create bottlenecks in the paper handling process - queues at the copier are a common problem.)

- Integration of data processing and graphics into "image processing" systems has not been effective despite efforts by major vendors in the United States.

- At this time, VIPS represents an imaginative solution to a major business systems problem. The major questions to answer are:

  - What are the most promising applications areas?

  - What are the competitive threats to the system?

  - What is the technological "window of opportunity" for the system, and can today's competitive advantage be maintained?

C. RESEARCH CONDUCTED

- Since VIDEOFICHE is not a specific product, but rather a system concept, telephone interviews were varied in nature. The responses were either very general or quite specific, depending upon the respondent's knowledge of image processing, his comprehension of the VIDEOFICHE concept, and his particular orientation. A summary of results from selected interviews is included.

- State Farm. Despite enthusiasm for image processing and positive results from a joint IBM feasibility study, State Farm decided the 10% projected personnel savings did not warrant the massive changes required for implementation.

  - These changes were viewed as new hardware, complex systems software, complex applications software, new procedures, new employee responsibilities, and a new organizational structure.

  - There was also the underlying feeling that IBM was holding something back concerning future technological development.

- Insurance Institute for Research. The IIR felt image processing in the insurance industry could only be justified by applying incremental costs to a properly installed data processing system.

  - The need for image processing was seriously questioned in the case of State Farm.

  - The system was never installed, whereas a straight IBM solution under Systems Network Architecture (SNA) was successful. To quote: "IBM isn't pushing it anymore."

- IBM Data Processing Division. The main ideas expressed were:

  - Image processing is on the back burner. Most of the concepts are only "bridge technology" until storage costs permit better systems solutions.

  - Eliminating the paper flow by putting people on-line.

  - Concern about reliability and performance will limit the applications.

- IBM General Business Group. The VIDEOFICHE system was understood and found "interesting."

  - Videotape storage was questioned in terms of response time. The implication was that careful systems design was required and users could not be depended on to design systems carefully.

  - Videotape was considered to be an update capability.

  - Videodisk was discussed and the impression was gained that it would be more appropriate for "education" and giving management "pictures", rather than for regular commercial applications.

  - The VIPS system was most impressive because of total integration.

- The statement was made: "We can't get the General Systems Division and Office Products Division very well integrated."

- The feeling was also expressed that satellite communications would open up additional opportunities.

- U.S. Government Accounting Office. GAO has been concerned about government paperwork for decades and has done repeated studies on computer input and output systems.

  - They felt anything which helped reduce paper would be worthwhile and had to be considered.

  - The feeling was that paper would always be there, and it was difficult to eliminate people under any circumstance.

  - The case of keypunch was referred to as an example of the difficulty: "It would take as long to replace keypunch replacement systems as it took to replace keypunch."

- State of California: Employment Development Department. The general reaction was that the system sounded great, but it would probably be difficult to install because people don't like to change.

  - Computer Output Microfilm (COM) could make significant savings without major system changes and they would prefer to work on that.

  - Also, they had studied COM and were having difficulty persuading people to change; VIDEOFICHE would be even more difficult.

- Microform Data Systems. At present, Microform Data Systems competes directly against data processing systems in major application areas, such as information retrieval within the Bell System.

- The ability to integrate data processing and image processing was considered desirable in many application areas. However, the specific point was made that VIDEOFICHE did not apply to most applications areas the company competing in, because response time would be too slow. Most responses are required when someone receives a telephone inquiry.

- They could visualize the system replacing some microfiche eventually but did not feel the current system was a competitive threat.

- However, they were interested in it conceptually.

- Bank of America. The "Banker Project" which would have digitized paper documents at their point of entry into the Bank of America network has tentatively been put into a research mode.

  - The reason was, theoretically, bandwidth on the network.

  - There were some technical problems and a general concern about cluttering up the network with a lot of redundant information.

  - While Bank of America has projects in many technical areas, it is not optimistic that image processing will be integrated with data processing in the foreseeable future.

  - The problems addressed by VIPS are obviously of concern and there would probably be some interest in analyzing it.

  - The major problem in the company at present is implementing the fundamental data processing decision to install IMS - the resources required are enormous even by Bank of America standards.

- Cogar (ICL). The feeling was expressed very strongly that new systems concepts require substantial cost savings to even be considered.

- An early experience with key-to-tape was used as a specific example.

- The VIDEOFICHE concept was felt to be applicable to many specific current systems and probably would have an extended life where graphics are truly required (engineering drawings, maintenance systems, etc.).

- The need for signature recognition was questioned: "Can you imagine designing a secure system today where a signature is a significant factor - plastic at an automatic teller machine is better."

- The system was considered to bridge and integrate technologies and this was considered to have considerable potential. However, it was considered to be a hard sell.

- Zytron. A summary of the conclusions Zytron drew from our meetings are:

  - VIDEOFICHE is nothing unique, except it is here now.

  - Zytron would be interested in using it if the system is reasonably priced.

- Since the general systems concept covers a potentially enormous market and paper handling problems transcend industry boundaries, the research emphasis was on interviewing individuals within organizations who were knowledgeable about image processing systems.

- Two major IBM efforts to enter this market with data processing systems were investigated. These joint vendor/user studies involved over ten man years of effort.

  - State Farm was selected by IBM for a joint study into the application of image processing. The study identified total personnel savings in excess of 10%. However, image processing was not implemented because:

- New and unfamiliar hardware (scanners and mass storage) would have been necessary in regional offices of the company.

- New and complex systems software would have been required.

- New applications software would have been required.

- New procedures would have been required because of the elimination of certain work stations.

- Employees would have had new responsibilities requiring new job descriptions which may have resulted in problem negotiations with employee groups. (There was an underlying implication that upgrading of job classifications could have impacted the potential savings.)

- Finally, it was concluded that a new organization would be required, resulting in unusual management problems.

- It is evident that the cost, risk, and benefit analysis did not clearly justify the drastic changes envisioned by management to implement image processing effectively.

- The other effort to solve insurance company paperwork problems was another joint study between IBM and Royal Globe, a property and liability insurance company. It was conducted in parallel with the State Farm study. The approach with Royal Globe was conventional data processing, in IBM's SNA (Systems Network Architecture) environment. The systems approach was accepted by Royal Globe.

- The IBM systems manager on the joint study is currently the President of the Insurance Institute for Research (IIR) which is an independent research organization funded by companies in the property and liability insurance industry. Some of his comments concerning the relative merits of image processing as opposed to conventional data processing were:

  - "Storage requirements for image processing are enormous."

  - "Additional cost is greater than the added value which might be associated with image processing."

  - "Only way it can be justified is by taking the cost saving from regular data processing approaches and adding on image processing as an incremental cost."

  - "If a good job of systems analysis is done, image processing is not needed to solve the paper flow problems."

- The IIR respondent admitted a certain amount of bias against image processing because this systems approach had been considered somewhat competitive when he was with IBM. However, he felt his feelings were justified because IBM has put image processing on the back burner. His comment was: "If IBM can't sell it, who can?"

- The case study indicated some fundamental problems with the application of radically new systems approaches:

  - It is difficult to sell new concepts unsupported by new technology (or imaginative use of existing technology).

  - There is tremendous resistance to radical change in major operational systems. This resistance to change extends from executive management down through system designers and programmers, and exists in both vendor and user organizations.

- A significant level of cost savings is necessary to prompt major systems changes. INPUT has repeatedly researched the level of cost savings needed to prompt change and research has indicated that savings of at least 25% are required. This finding is very important to the joint venture and must be carefully considered in VIDEOFICHE marketing.

- Other interviews produced a variety of negative and positive responses in the VIPS system. It should be noted that even with a careful explanation of the system, frequently it was not clearly understood by the respondents. This conceptual complexity (newness) of the system is significant in its own right and must be considered in the marketing plan of the joint venture. Selected negative comments are shown in Exhibit I-2, and positive comments in Exhibit I-3.

- On the other hand, practically everyone interviewed was interested in discussing the subject of improved paper flow and image processing.

D. CONCLUSIONS AND RECOMMENDATIONS

- The fact that VIPS is really a systems concept rather than a specific product is the key consideration in the technical evaluation. It has the following ramifications:

  - Selling and installing new systems which change the basic operating procedures of the client are extremely difficult and expensive for the vendor.

  - Human resources to develop, sell, and install custom systems for specific applications are critical to the success of the venture and such resources are limited.

EXHIBIT I-2

SELECTED NEGATIVE COMMENTS
BY RESPONDENTS

"Other technology may work as well."

"Highly specialized applications."

"Difficult to install."

"People don't like to change."

"Performance and reliability of Videotape may be a problem."

"Not a magical solution."

"Paper is going to stay."

"There are easier ways to reduce costs."

"It's a bridge system; may be obsolete before it is installed."

"It's going to be expensive." (not cost effective)

"Terminal resolution may not be adequate."

EXHIBIT I-3

SELECTED POSITIVE COMMENTS
BY RESPONDENTS

"Anything that helps 'paper problem' is worthwhile."

"Update of images is a technological step in the right direction."

"The system's design is good - integration of data processing and image."

"Satellite may open this whole area up."

"Eventually it will benefit teleconferences and education."

"There are probably lots of applications." (After some thought on the subject.)

"Great for technical documentation."

"It might replace microfiche."

"The concepts aren't new, but it's here now."

- Specific applications expertise will be required to implement viable systems. This implies a certain amount of specialization and will be important in developing a marketing plan.

- The most important investment on the part of both parties will be the human resources transferred to the joint venture.

  - The systems concept and/or hardware are of no value without people to develop, sell, and install them.

  - Both parties must make a substantial investment of highly qualified people to the venture and make the opportunity attractive enough to ensure they are retained.

- The availability of highly qualified personnel would provide a "window of opportunity" which would make it difficult for others to catch up.

  - CSI has a significant advantage in having developed the basic systems software. They also are acquiring considerable knowledge concerning the requirements to effectively market the system.

  - Sheer investment of bodies and dollars cannot significantly expedite the development of complex systems software. In fact, there is some indication that the more people involved, the longer the project takes. Competitors will find it difficult to overtake CSI's lead.

- IBM and other vendors have actively investigated image processing systems, they have not been successful and probably will not react rapidly to someone new entering the market with what appears to be "bridge technology."

- Most technical evaluations of systems which do not incorporate exotic new technology underestimate the opportunities available through the use of "bridge technology." These opportunities are substantial.

- Leading edge technology is usually very slow in being effectively employed.

- Implementation costs of new technology are always underestimated.

- Systems that can be demonstrated to work have life well beyond the announcement of new technology.

- An excellent example of technology which was slow to develop but continues to be successful with other technologies on the horizon, is COM. VIPS recognizes this by making provision for the integration of COM in its systems design.

- After much talk about image processing, CSI has developed a workable systems concept using current technology. It is at the beginning of the "window of opportunity," which is estimated to be two years. The VIDEOFICHE market must be developed during this period or the present competitive advantage will be lost.

- Past INPUT research has repeatedly disclosed that at least 25% savings are required to prompt major systems or procedural changes. Image processing was rejected by State Farm based on an estimated cost savings of 10%. The reasons for rejection merely outline the changes which would be necessary to implement the system. The potential customers obviously felt that the savings were not worth the inconvenience and risk involved in such change. This only confirms the critical 25% level of cost savings revealed in prior research.

- INPUT considers that VIDEOFICHE will be successful because it could achieve a 25% level of savings necessary to force change in certain circumstances.

- VIDEOFICHE permits change through the integration of data processing, micrographics, and VIDEOFICHE technologies.

- The sense of competition between image processing and data processing is specifically excluded from the VIDEOFICHE systems concept. It emphasizes integration of the two. Thus, the criticism of image processing by the "data processing oriented" project leaders would be eliminated. Image processing would become a convenient extension of good data processing systems design.

- However, the potential impact of advanced technology on VIDEOFICHE systems concepts cannot be ignored. A substantial effort must be made to aim product development at future markets. Any effort to freeze on current systems concepts would be doomed to failure and effectively close the "window of opportunity." A long-range plan is essential.

- INPUT recommends that:

  - GA confirm the primary systems assumptions INPUT has made concerning the VIDEOFICHE system through detailed systems analysis, particularly with respect to system softwae.

  - The venture should be entered into only with substantial commitment of personnel resources on GA's part.

  - Before a decision is made, GA should evaluate the joint venture's impact on its basic product line and business objectives. It should only be initiated if it can have a significant impact on GA's long-range business plan.

  - Before entering such a venture, the area(s) of application specialization should be selected based on available human resources. The broad range of the potential market only complicates the problem of selecting the best opportunity.

- The banking market in Europe should be pursued because of CSI's link with the CCB and the standardization of banking forms that exist in Europe. However, this standardization does not exist in the U.S. and it may be a difficult market for VIDEOFICHE.

- The automotive industry in the U.S. should be pursued, particularly with the interest at General Motors.

- The insurance industry in the U.S. has the need and potential interest in VIDEOFICHE and would be a good industry to investigate.

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II CORRELATIVE SYSTEMS INTERNATIONAL S.A. (CSI)

II CORRELATIVE SYSTEMS INTERNATIONAL S.A. (CSI)

A. GENERAL DESCRIPTION OF CSI

- CSI is a private company headquartered and incorporated in Brussels, Belgium. The company is a "systems house" with a strong capability in software and computer systems. The principal line of business is VIDEOFICHE, an image processing system described in Section I.

- CSI operates in Belgium, France, United Kingdom, Holland, and Luxembourg. The company is seeking to enter the U.S. market by means of a joint venture with General Automation. The principal offices are located at:

  - Correlative Systems International S.A.
    Parc Scientifique d'Evere
    Rue de l'Aeronef
    1130 Brussels, Belgium
    Telephone 02/242 57 00
    Telex 63598 CORSYS B

- The company was formed in January, 1973 by Dan and Roland Borrey and is 100% owned by them. The Borreys are brothers in their mid-thirties. Dan Borrey is President, with a particular focus on marketing and financing the company, while Roland Borrey is Technical Director, personally overseeing all research and development.

- The Borreys are both Belgian and both hold advanced degrees from the University of Southern California; Dan Borrey received a MBA in 1968 and Roland Borrey a M.S. in Engineering in 1969. Both have had work experience in the United States. Roland Borrey was engaged in electronic systems design for three years with Beckman Instruments.

- Exhibit II-1 shows the relationship between the various international companies and a small medical systems group. These are wholly-owned, but separate companies.

- The plan is for Dan and Roland Borrey to transfer to the VIDEOFICHE joint venture. The rest of CSI's business will either be sold, or the U.K. and France enterprises will each be run by a General Manager. Holland/Luxembourg/Belgium, minus VIDEOFICHE and the medical systems group, will be run by a third General Manager.

- The Correlative Systems management team is shown in Exhibit II-2. The organization is structured so that sales, software services, minicomputer services, and administration report to Dan Borrey. Roland Borrey acts as a staff R&D Technical Director to whom all engineering and development report. The production and product development organization is shown in Exhibit II-3.

- It is Roland Borrey's intention to move eight people to the U.S., including himself. CSI now employes over 100 people.

B. VIDEOFICHE

- VIDEOFICHE started with a study for the European Economic Commission Statute Department (EECSD) relative to management access to information. CSI examined the available systems alternatives and decided that there was nothing meeting EECSDs needs and delivered a proposal to EECSD. In January

EXHIBIT II-1

CORRELATIVE SYSTEMS INTERNATIONAL
PLANNED INTERNATIONAL ORGANIZATION WITHOUT VIDEOFICHE

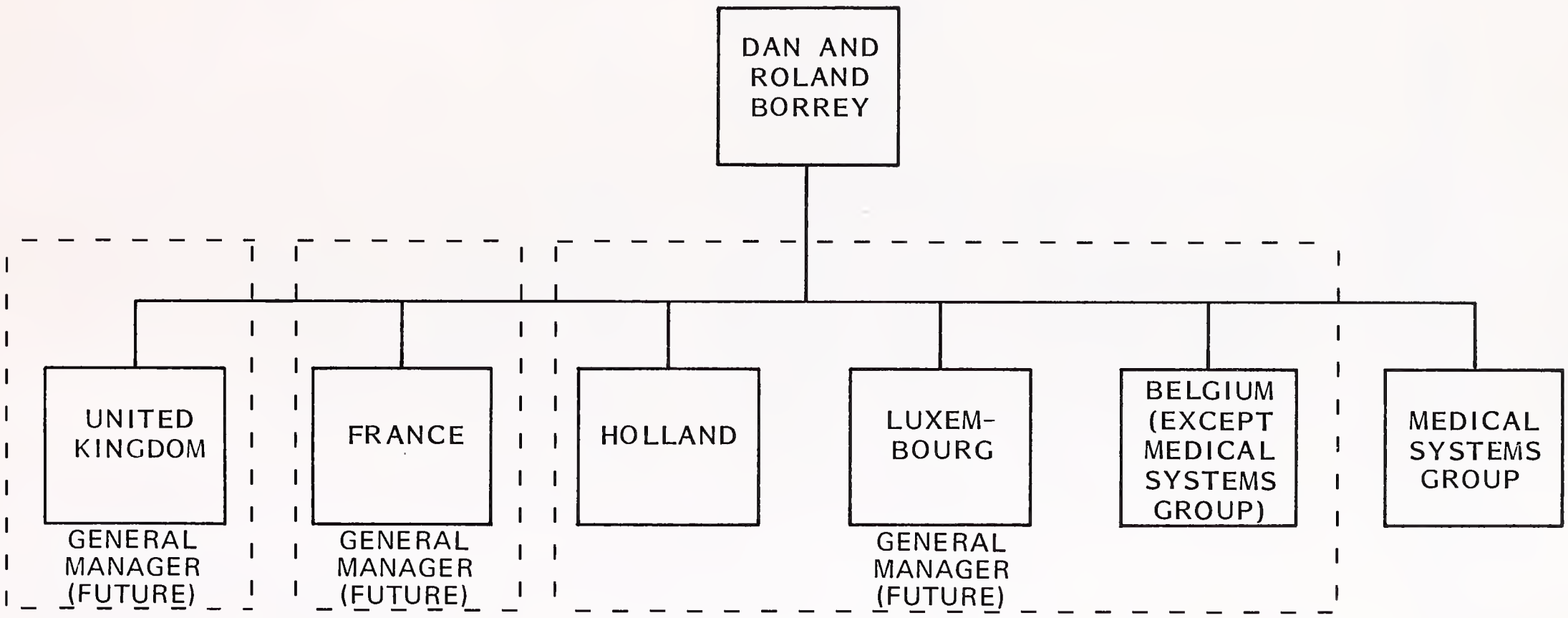


EXHIBIT II-2

CORRELATIVE SYSTEMS INTERNATIONAL
PRESENT MANAGEMENT

DAN BORREY

President and General Manager
Correlative Systems
International S.A.
Chairman Corrsys (UK) Ltd.

YVES HOMPES

Commercial Director
Correlative Systems
International S.A.
Commercial Director Corrsys
(UK) Ltd.

ROLAND BORREY

Technical Director Correlative
Systems International S.A.
Technical Director Corrsys
(UK) Ltd.

JOHN FELLER

Operational Director Corrsys
(UK) Ltd., International
Manager Aerospace Systems,
Correlative Systems
International S.A.

J.F. BOISSON

Sales Manager
France

JEAN-LOUIS DELOBEL

International Manager
Documentation and Retrieval
Systems, Correlative
Systems International S.A.

COR VAN STRATEN

Sales Manager
Correlative Systems
(Netherlands) BV

MICHEL VANDEWIELE

Sales Manager
Correlative Systems
(Luxembourg) S.A.

R. VAN BOGAERT

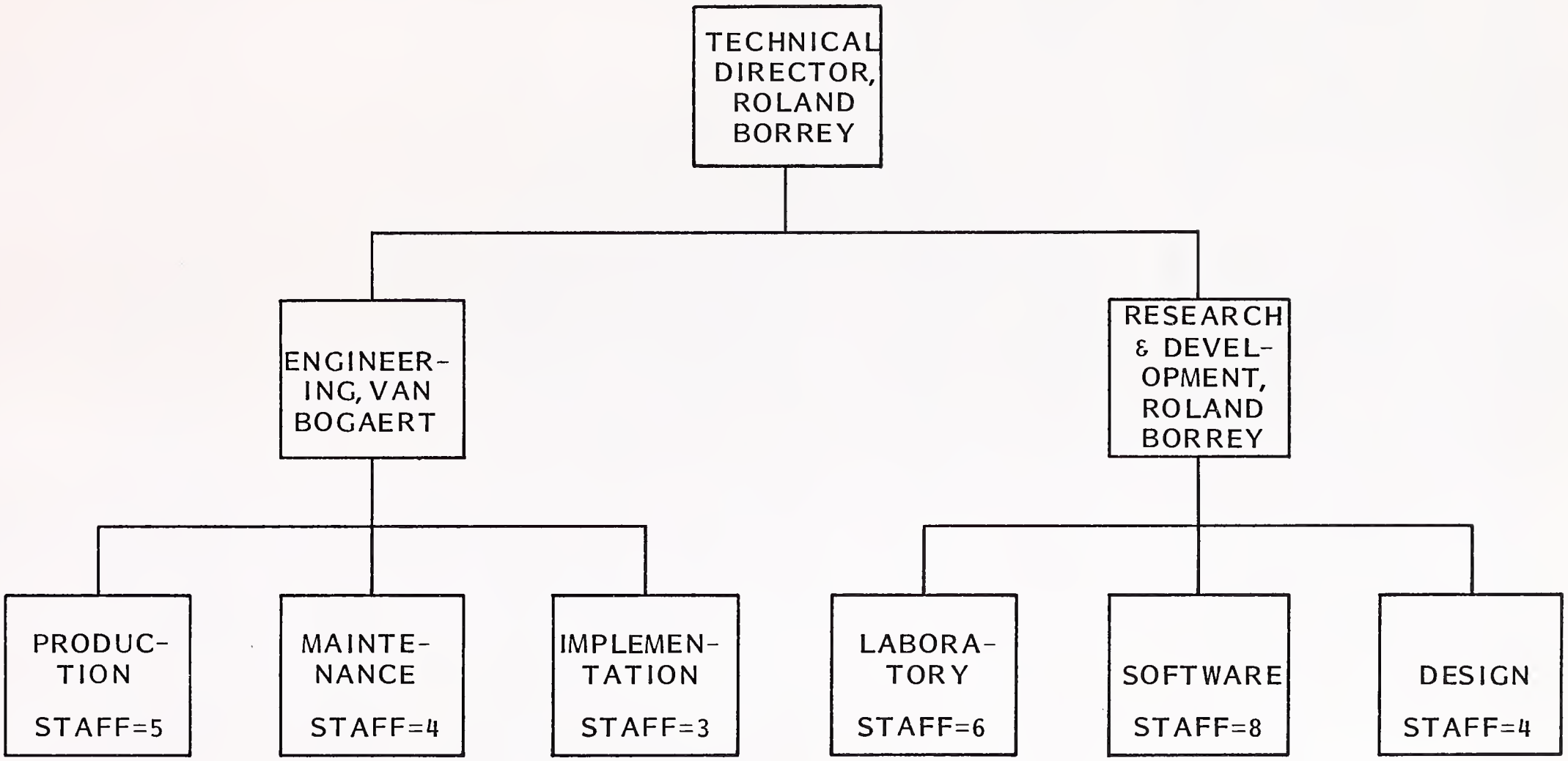
Systems Engineering Manager

GEORGE NUNN

Sales Manager
Corrsys (U.K.) Ltd.

EXHIBIT II-3

CORRELATIVE SYSTEMS INTERNATIONAL
PRODUCTION AND DEVELOPMENT ORGANIZATION



TOTAL STAFF = 33

1977, EECSD contracted with CSI for a digital computer system to process images. The prototype system was delivered in October 1977.

- Although this system never became operational, it did lead to a major contract with one of the Belgian banks - Credit Commercial de Belgique (CCB). This system is operational and accounts for most of the CSI VIDEOFICHE revenues.

- CCB is a private company which has 2,000 employees. Belgian cities are the stockholders. There are 1,400 branches which are separately owned.

- Expansion of the CCB system looks promising and potentially represents millions of dollars of future revenues.

- CSI currently has a VIDEOFICHE backlog of $3.25 million with four clients as follows:

-	CCB (Belgian bank)	$ 1.50 million
-	ASSEDIC (French Social Security)	0.50
-	CCP (French Post Office)	0.50
-	CETUP (Service Bureau - bank transfer)	0.75
		$ 3.25 million

C. CSI FINANCIAL

- The initial capitalization of CSI in January, 1973, was $10,000. The sales in fiscal year 1979, ending September 30th, were $6.2 million, with VIDEOFICHE accounting for $3 million. In 1979, CSI's net worth was over $300,000.

- CSI sales, other than VIDEOFICHE, are approximately equally divided between software services and engineering development.

- CSI's financial results for the last five years are shown in Exhibit II-4.

- CSI has several prospects for future business, all of which are dependent on CCB results. These include the Co-operative Bank Limited of Manchester, England, which received a systems proposal from CSI in July 1979. CSI has also delivered a proposal to British Airways.

- VIDEOFICHE attracted a great deal of attention at a September 1979 trade show (SICOB) in Paris, France. Exhibit II-5 is a copy of the VIPS 2000 product announcement.

- VIDEOFICHE is now being actively sold in Belgium, France, and the United Kingdom.

- Cost and pricing for a typical VIDEOFICHE system is shown in Exhibit II-6.

- In addition to future direct sales contracts, the Borreys would like to license the technology to other companies. They feel that there is approximately $10 million of technology transfer business available which could have a $5 million profit potential. Current discussions are underway in this regard with Xerox, Phillips, Honeywell, and NEXOS (part of Britain's National Enterprise Board). INPUT recommends that licensing opportunities be explored as an adjunct to the main business of the joint venture.

EXHIBIT II-4

CORRELATIVE SYSTEMS INTERNATIONAL

FINANCIAL HISTORY, 1975-1979

(FISCAL YEAR END 9/30)

YEAR	NUMBER OF EMPLOYEES	TOTAL REVENUE ($ MILLION)	VIDEO-FICHE REVENUE ($ MILLION)	PROFIT STATUS	NET WORTH ($000)
1979	130	$ 6.2	$ 3.0	OPERATING PROFIT	>$300
1978	55	2.7	0.25	OPERATING PROFIT, FISCAL LOSS	300
1977	36	1.6	-	NA	150
1976	24	0.87	-	NA	80
1975	12	0.37	-	NA	50

NA = NOT AVAILABLE

EXHIBIT III-5

VIPS 2000 PRODUCT ANNOUNCEMENT

VIPS 2000

THE NEW WAY NOT TO HANDLE DOCUMENTS

VIPS 2000 - Integrated Image and Data Processing System.

The VIPS 2000 system (Vidéofiche image processing system) using Videofiche technology is the first computer system which integrates both document image and data processing.

VIPS 2000 allows data entry, and image storage / retrieval directly on the computer using digital media.

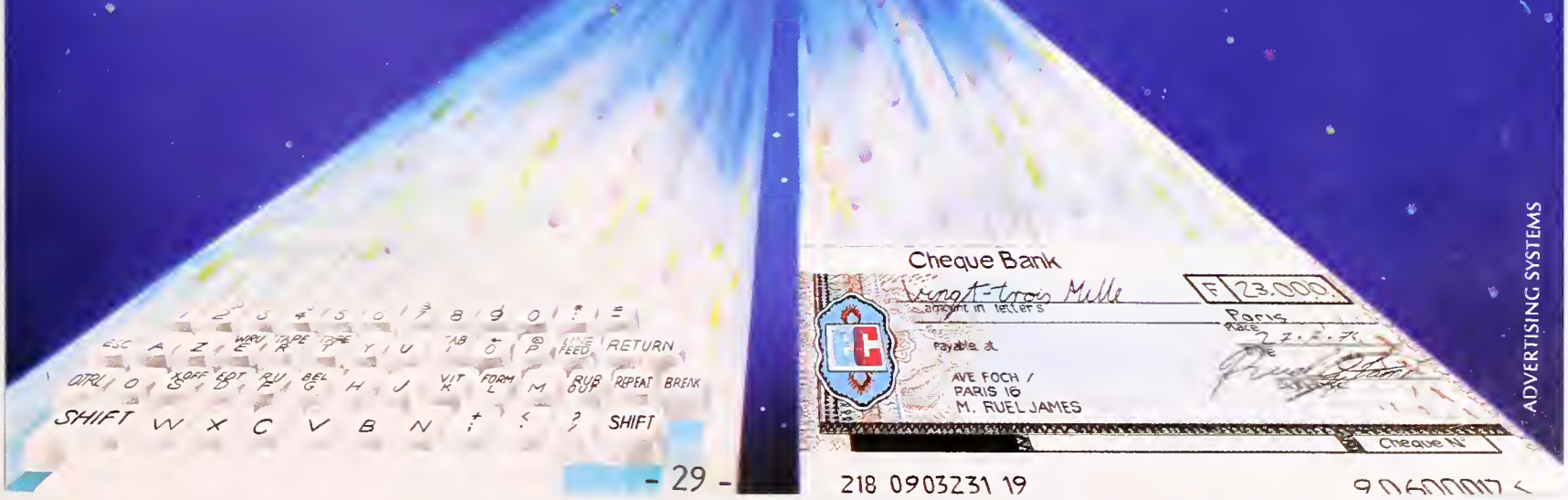
The system features the digitizing of the document images, automatic caracter recognition, simultaneous retrieval / display of document images and related data records, data entry of complementary information, and all data processing features of standard computer systems.

VIPS 2000 allows automatic retrieval on the computer terminal of source document images and direct comparision with related data records, it also allows retrieval of all types of document images on the same terminal and provides for hardcopy printing.

Thanks to the exclusive integration of advanced technologies, the VIPS 2000 revolutionizes the techniques for capture, processing and retrieval of information.

VIPS is a product of
CORRELATIVE SYSTEMS INTERNATIONAL S.A.
RUE DE L'AERONEF - 1130 BRUXELLES
TEL. 242.57.00
TELEX 63.598 CORSYS B.

CORRELATIVE SYSTEMS UNITED KINGDOM
CATHERINE STREET, - ASTON
BIRMINGHAM B6.5RS
TEL. 021 - 328.48.40
TELEX 335511



ADVERTISING SYSTEMS

EXHIBIT II-6

PRICING FOR A TYPICAL
VIDEOFICHE SYSTEM

UNIT	COST (DOLLARS)	PERCENT MARKUP	PRICE (DOLLARS)
GA CONTROLLER	$ 67,000	35%	$ 90,000
DISC STORAGE UNIT			
300MB	10,000	300	40,000
CAMERA			
MATERIAL	12,000		
LABOR	3,000		
TOTAL	$ 15,000	125%	$ 34,000
MASS STORAGE TAPE (MST)	$ 15,000	267%	$ 55,000
CONTROLLER FOR FOUR MST	20,000	175	55,000
TERMINALS (8)			
MATERIAL	32,000		
LABOR	11,000		
TOTAL	$ 43,000	125%	$ 97,000
SUBTOTAL	$ 170,000	118%	$ 371,000
INSTALLATION	$ 7,000	125%	$ 16,000
SOFTWARE	N/A	-	40,000
GRAND TOTAL	$ 177,000	141%	$ 427,000

III DETAILS OF THE PRESENT AND FUTURE VIDEOFICHE CONFIGURATION

III DETAILS OF THE PRESENT AND FUTURE VIDEOFICHE CONFIGURATION

A. SYSTEM CONFIGURATION

- The systems diagram for the VIDEOFICHE image processing system (VIPS) is shown in Exhibit III-1.

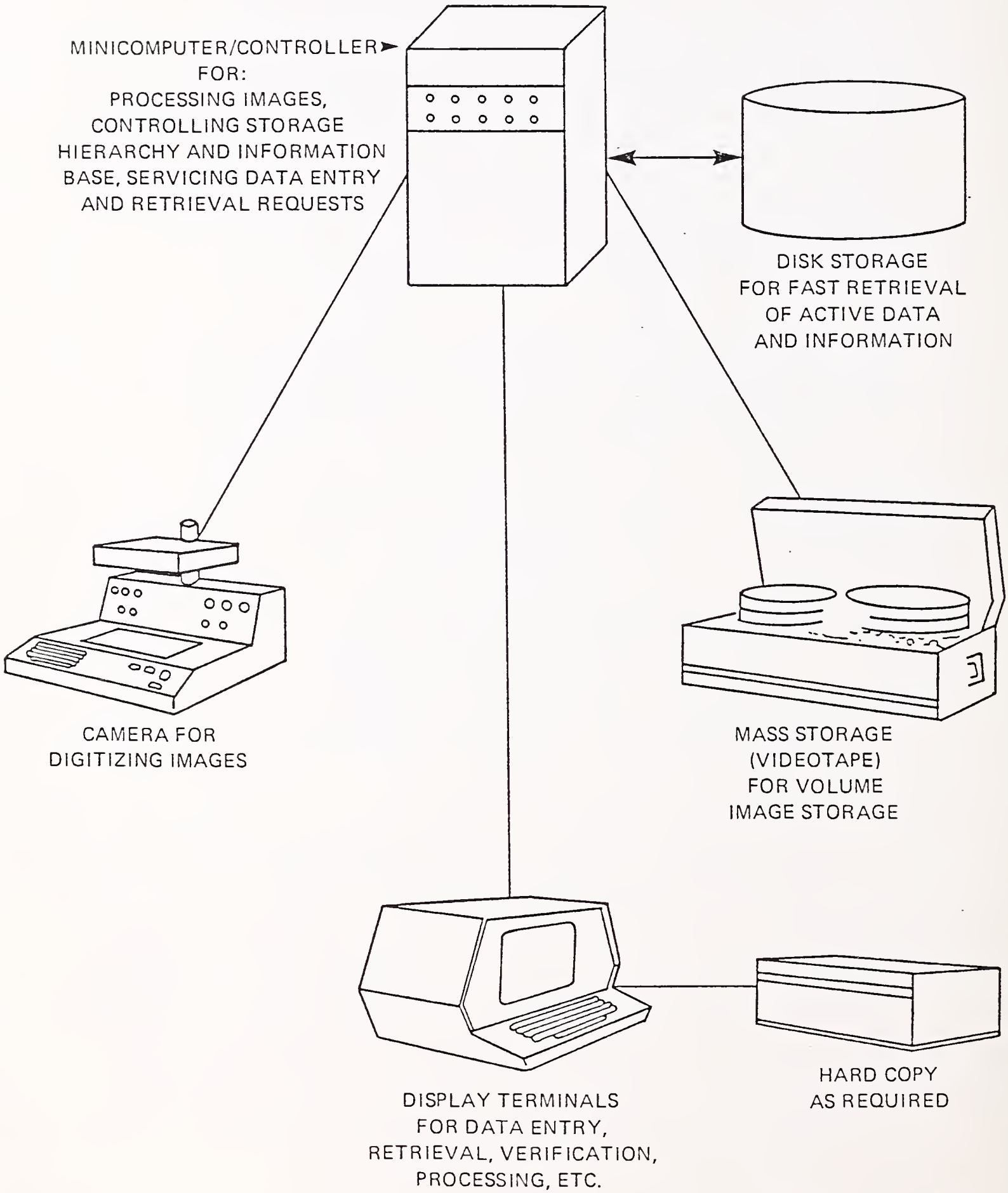
B. CAMERA

- There are two types of cameras that CSI provides:
  - The CS 2000, which is basically a single form by single form product, priced at $35,000.
  - The CS 8000, which has a moving transport and can feed up to three documents per second, priced at about $50,000.
- The basic unit is a microfilm camera supplied by Fairchild which costs about $3,000. The unit uses digital scan. It produces a 1024 by 1024 bit matrix which represents the image.
- The transport mechanism is supplied OEM by AGFA cameras.

EXHIBIT III-1

SYSTEMS DIAGRAM

VIDEOFICHE IMAGE PROCESSING SYSTEM (VIPS)



INP

- If the camera production is moved to the U.S., CSI plans to change its OEM supplier to the manufacturer of the transport used by Kodak.

- The automatic feed can run at a rate of three documents per second.

- An integral film processing device is optional.

- The camera controller includes a digitizer.

- A complete OCR reader is provided from Input Business Machines of Rockville, Maryland for $11,000 complete.

C. CONTROLLER

- The controllers used by VIDEOFICHE are based on the GA line of minicomputers.

  - The $500,000 "module" includes a GA 550 and two 300 megabyte disk storage units. It handles 30,000 documents per day.

  - Smaller modules can use smaller minis, but the GA 220 has been ruled out as being too small.

- CSI feels that the software modifications needed to change to another minicomputer supplier can be made by three programers in two months.

  - They have built into their CCB contract a contingency plan to do so.

D. DISK STORAGE

- The disk storage units are standard units with a storage capacity of 300 megabytes.

  - Two are included along with the GA 550 minicomputer in the $500,000 "module."

E. TERMINALS

- The terminal is a raster scanning device. A single unit uses a graphic alpha/numeric driver and a microprocessor equivalent to an Intel 8080.

- A separate cluster device for compression is included which can support four or eight terminals. The memories are in the cluster controller so that the picture in the individual terminals is constantly refreshed.

- The display CSI is using now can only display a half a page (an A-4 document) with a roll-up feature to display the second half.

  - The contracts they now have are for half page display.

- The display tube is a 15 inch slow green phosphor unit, supplied by Ball Brothers or Motorola.

- The terminal memory unit has a 128K memory and is supplied by Mostek. They use 4K bit chips.

- The processor used in the display is a standard 8 bit processor.

- CSI makes the PC boards for the video driver in the terminal.

F. MASS STORAGE TAPE

- The Mass storage tape (MST) is a semi-professional, one inch, reel to reel, tape recording machine supplied by Grundig.
  - Another supplier of such units is Ampex, who markets a product called VPR 1 and 2, which are semi-professional, one inch tape units.
  - Another possible contributor is Akai.
- Grundig has recently offered a new unit which operates at 10 megahertz. The present units operate at 5 megahertz.
  - Although the units are designed to operate at 5 megahertz, CSI has been running them at over 6. This has resulted in an error rate of up to 10%. However, since this only relates to the resolution of the image, it has been acceptable.
  - With the new Grundig devices at 10 megahertz, the error rate should go down to well below 1%, which would give increased clarity and resolution.
- There are two methods of operation of the tape unit.
  - Continuous flow enables a tape to be completely filled in about two hours, dumping it from disk. This is working at half density and is what CSI is using for CCB.
  - The other method of operation is on a picture-by-picture basis which stores, at full density 50,000 documents per tape. However, it takes much longer to load a full tape.

- It is important to note that the method of storage also relates to the method of retrieval. If continuous flow is used to store, then continuous flow must also be used to retrieve the information.

- The access time to the tape is never less than 10 seconds, and on fast scan the tape can be run through in three minutes to find a particular file - as long as the file has not been recorded in continuous flow.

- To Roland Borreys' knowledge, the use of the Grundig unit to install digitized information is unique to CSI.

G. FUTURE DEVELOPMENT

- Roland Borrey feels that the laser disk will supplant the existent mass storage tape technology for 80% of the applications within two years.

  - The laser disk will allow for storage of up to one million pages.

  - The 20% which will not be replaced are those where actual updates are heavy, thus making use of the laser disk which burns the information, difficult.

  - Cost of the laser disk will be about $10,000 for the controller, $10,000 per read/write unit, and up to 64 disks per carousel at a cost of $10,000-$15,000.

  - Under its arrangement with Phillips, CSI can get delivery of the laser disks around January 1981. It is expected that the disks will be readily available by June 1981.

- As a matter of priority, a full page display should be developed.

- Redesign of the system to use LSI will reduce costs by reducing the number of boards needed.

  - LSI would allow for the improvment of the scan to 2,000 bits by 2,000 bits (from 1024 x 1024).

H. SOFTWARE

- There are three levels of software: the systems software from GA, some enabling software, and applications software. CSI is using GA Control 3 and is trying to get Control 4 which is needed for over 64K of storage. It is also using the compilers and may well use FMS. This software does not include COBOL.

- One of the key developments in software CSI is looking at is pattern recognition.

  - It would specifically be used for things like signature verification and document validation against items already known, as opposed to trying to read written numbers or letters, which has proved extremely expensive for companies like IBM.

I DOCUMENTATION

- Inadequate documentation is a problem and CSI is currently making an effort to improve it.

IV PROPOSED GA/CSI JOINT VENTURE

IV PROPOSED GA/CSI JOINT VENTURE

A. STRUCTURE

- It is proposed that a joint venture be formed between GA and CSI and any outside source of funding to develop the VIDEOFICHE opportunity.

- The joint venture will be an international company, headquartered in the U.S. The planned location is in San Diego or elsewhere in Southern California. It will have subsidiaries abroad. The European organization will be headquartered in Brussels.

  - The line of business of the joint venture is image processing systems.

  - The joint venture will be formed as early in 1980 as possible to exploit the present "window of opportunity" CSI now enjoys, believed to be about two years.

  - Dan and Roland Borrey will be key to the venture. They plan to either place the other systems business of CSI under general managers in Europe or sell it out.

- The essential reasons for CSI to seek a joint venture are:

  - To establish credibility.

- To gain entry to the U.S. market.

- To gain needed resources (staff and money).

- Since VIDEOFICHE is a system which is developed and installed on a custom basis rather than as a standard product, system consultants and designers are very important members of the staff.

  - Also, the sales people must have considerable systems analysis capability in order to develop custom proposals.

  - The ability to hire and train key staff members must be given high priority for the joint venture to be successful.

- The initial staff would be 40 people from CSI, located in Belgium, and 20 people from GA, located in Southern California. Another 40 people, either from GA or new hires, will be added by the end of the first year bringing the first year total to 100 people.

- For the present, research and development would stay in Brussels with the same people. However, Roland Borrey would move to the United States, and in time, would transfer that function here.

- Initially, the product would be shipped from Belgium, with production ultimately being transferred to the U.S.

- The manufacture of peripherals by General Automation should considered; in particular, the camera and the terminals.

  - The camera represents 9% of the total system cost.

  - Terminals represent 25% of the total system cost.

- For comparison, the GA controller represents 39% of the total system cost. The GA supplied hardware would rise from 39% to 73% by taking over the manufacture of terminals and the camera.

- A VIDEOFICHE demonstration system is presently in the U.S. at the GA office in Detroit. It is located there to support a sales effort directed toward a contract with General Motors for a system to handle image processing of engineering drawings.

- In addition to the sale of VIDEOFICHE systems, an opportunity to license the technology to other companies is presently being explored.

  - North American Philips is considering a $3-$5 million contract for existing CSI technology and for R&D maintenance. Its interest is to attach laser disks to the image processing system. It would give CSI priority for the Philips laser disk if a licensing agreement is executed.

  - Honeywell is under pressure from the French government to have an image processing system based on Honeywell processors. They are considering a multi-million dollar contract over two years, specifically in electronic mail. Honeywell's interest is not as urgent as is Phillip's.

  - Control Data is looking at the IBM compatible market and is interested in a joint venture similar to the GA/CSI proposal.

  - Ampex is interested in an arrangement to provide a video disk and mass storage tape for future VIDEOFICHE systems.

  - Xerox has also held exploratory meetings with CSI.

  - NEXOS (part of Britain's National Enterprise Board) is interested in buying the technology and funding a company. It is really a venture capital organization.

- INPUT recommends that the joint venture try to develop profitable licensing arrangements.

  - This should be regarded as an additional area of business, but not as a mainstream effort.

B. SALES PROJECTIONS

- The sales projections for the joint venture were established by two analyses. First, the investments and staff required to develop the business to the point where it is self-sustaining were projected for three levels of sales as shown in Exhibit IV-1 and IV-2.

- In group discussions between GA, CSI, and INPUT, it was decided that an appropriate level of business was between scenarios 1 and 2, with the final projections to be established by means of a detailed analysis.

  - This judgement was influenced materially by the difficult staffing requirements of Videofiche.

- Secondly, having roughly established the business level, a detailed buildup was made, based on the following premises:

  - The beginning backlog of committed European sales of $1 million.

  - The beginning installed base in Europe of $1 million.

  - The beginning backlog of U.S. sales is zero.

  - Sales effort will require team selling, with each team consisting of one salesman plus two systems support people.

EXHIBIT IV-1

FINANCIAL SCENARIOS FOR
GA/CSI VIDEOFICHE JOINT VENTURE

SCENARIO	1980 ($000)	1981 ($000)	1982 ($000)	TOTAL ($000)
SCENARIO I				
REVENUE:	$ 6,000	$ 9,000	$18,000	$33,000
CASH REQUIRED:	2,000	700	2,000	4,700
SOURCES:				
BANK - 50% A/R	1,000	350	1,700	3,050
INVESTORS	1,000	350	400	1,750
SCENARIO II				
REVENUE:	8,000	15,000	36,000	59,000
CASH REQUIRED:	3,300	1,900	5,100	10,300
SOURCES:				
BANK - 50% A/R	1,400	900	3,900	6,200
INVESTORS	1,900	1,000	1,200	4,100
SCENARIO III				
REVENUE:	10,000	20,000	55,000	85,000
CASH REQUIRED;	4,500	3,100	8,500	16,100
SOURCES:				
BANK - 50% A/R	1,800	1,400	6,300	9,500
INVESTORS	2,700	1,700	2,200	6,600

EXHIBIT IV-2

STAFFING SCENARIOS FOR
GA/CSI VIDEOFICHE JOINT VENTURE

SCENARIO	DECEMBER 1980	DECEMBER 1981	DECEMBER 1982
SCENARIO I			
PRODUCT DEVELOPMENT	13	19	32
MARKETING	40	58	119
GENERAL & ADMINISTRATIVE	13	19	32
DIRECT LABOR	14	18	50
INDIRECT MFN LABOR	12	15	42
TOTAL STAFF	92	129	275
SCENARIO II			
PRODUCT DEVELOPMENT	18	32	63
MARKETING	50	85	217
GENERAL & ADMINISTRATIVE	16	32	59
DIRECT LABOR	20	33	91
INDIRECT MFN LABOR	26	43	119
TOTAL STAFF	130	225	549
SCENARIO III			
PRODUCT DEVELOPMENT	22	43	95
MARKETING	67	129	340
GENERAL & ADMINISTRATIVE	22	43	95
DIRECT LABOR	31	55	153
INDIRECT MFN LABOR	26	46	129
TOTAL STAFF	168	316	832

INPU

- Once fully trained, each sales team will achieve, on the average, a $500,000 sale every six months.

- New sales groups will only achieve $500,000 sales the first year.

- System add-ons, plus software maintenance (hereafter referred to as "add-ons") will be 30% of installed base.

- The resulting projections are shown in Exhibits IV-3, IV-4, and IV-5. These from the basis for the final pro forma financial statement.

- The direct sales staff levels were determined in conjunction with the foregoing analysis and are shown in Exhibit IV-6.

- The marketing plan includes an extensive indirect marketing effort in advertising and promotion. The total marketing staff, including direct and indirect (or support) personnel is shown in Exhibit IV-7.

C. STAFFING REQUIREMENTS

- Overall staffing requirements at year end for three years are shown in Exhibit IV-8.

- Overall staffing requirements' average for the year, for three years, are shown in Exhibit IV-9.

D. FINANCIAL STATEMENTS

- The pro forma, summary financial schedules are shown in the following exhibits:

EXHIBIT IV-3

SELECTED BOOKINGS AND REVENUE PROJECTIONS - EUROPE

YEAR	NUMBER OF SALES	BOOKINGS ($ MILLION)	REVENUE ($ MILLION)	IN-STALLED BASE ($ MILLION)	YEAR END BACKLOG ($ MILLION)
YEAR 1					
BACKLOG	-	-	$ 2.0	$ 3.0	-
ADD-ONS	-	$ 1.0	1.0	-	-
1 TRAINED SALES TEAM	2	1.0	0.75	-	$ 0.25
3 NEW SALES TEAMS	3	1.5	0.75	-	0.75
TOTAL	5	$ 3.5	$ 4.5	$ 7.5	$ 1.0
YEAR 2					
BACKLOG	-	-	$ 1.0	-	-
ADD-ONS	-	$ 2.0	2.0	-	-
4 TRAINED SALES TEAMS	8	4.0	3.0	-	$ 1.0
4 NEW SALES TEAMS	4	2.0	1.0	-	1.0
TOTAL	12	$ 8.0	$ 7.0	$14.5	$ 2.0
YEAR 3					
BACKLOG	-	-	$ 2.0	-	-
ADD-ONS	-	$ 5.0	5.0	-	-
6 TRAINED SALES TEAMS	12	6.0	4.5	-	$ 1.5
6 NEW SALES TEAMS	6	3.0	1.5	-	1.5
TOTAL	18	$ 14.0	$13.0	$27.5	$ 3.0

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EXHIBIT IV-4

SELECTED BOOKINGS AND REVENUE

PROJECTIONS - UNITED STATES

YEAR	NUMBER OF SALES	BOOKINGS ($ MILLION)	REVENUE ($ MILLION)	IN-STALLED BASES ($ MILLION)	YEAR END BACKLOG ($ MILLION)
YEAR 1					
BACKLOG	-	-	-	-	-
ADD-ONS	-	-	-	-	-
5 NEW SALES TEAMS	5	$ 2.5	$ 1.25	-	$ 1.25
TOTAL	5	$ 2.5	$ 1.25	$ 1.25	$ 1.25
YEAR 2					
BACKLOG	-	-	$ 1.25	-	-
ADD-ONS	-	$ 0.5	0.5	-	-
4 TRAINED SALES TEAMS	8	4.0	3.0	-	$ 1.0
5 NEW SALES TEAMS	5	2.5	1.25	-	1.25
TOTAL	13	$ 7.0	$ 6.0	$ 7.25	$ 2.25
YEAR 3					
BACKLOG	-	-	$ 2.25	-	-
ADD-ONS	-	$ 2.5	2.5	-	-
8 TRAINED SALES TEAMS	16	8.0	6.0	-	$ 2.0
6 NEW SALES TEAMS	6	3.0	1.5	-	1.5
TOTAL	22	$ 13.5	$ 12.25	$ 19.5	$ 3.5

INPUT

EXHIBIT IV-5

TOTAL BOOKINGS AND REVENUE
PROJECTIONS - UNITED STATES AND EUROPE

YEAR	NUMBER OF SALES	BOOKINGS ($ MILLION)	REVENUE ($ MILLION)	IN-STALLED BASE ($ MILLION)	YEAR END BACKLOG ($ MILLION)
YEAR 1	10	$ 6.0	$ 5.75	$ 8.75	$ 2.25
YEAR 2	25	15.0	13.0	21.75	4.25
YEAR 3	40	27.5	2.25	47.0	6.5

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EXHIBIT IV-6

DIRECT SALES STAFF REQUIREMENTS

DIRECT SALES STAFF	EUROPE			UNITED STATES			TOTAL		
	YEAR			YEAR			YEAR		
	1	2	3	1	2	3	1	2	3
SALESMEN	4	10	14	5	9	14	9	19	28
DIRECT SALES SUPPORT	8	20	28	10	18	28	18	38	56
MANAGEMENT	1	3	4	2	3	4	3	6	8
TOTAL	13	33	46	17	30	46	30	63	92

EXHIBIT IV-7

TOTAL MARKETING STAFF

MARKETING STAFF	YEAR		
	1	2	3
DIRECT SALES	27	57	84
MANAGEMENT	3	6	8
ADVERTISING AND PRO-MOTION	2	3	8
MARKET RESEARCH AND PLANNING	2	3	8
ADMINISTRATORS	1	1	3
CLERICAL AND SECRE-TARIAL	6	13	20
TOTAL STAFF	41	83	131

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EXHIBIT IV-8

TOTAL STAFFING REQUIREMENTS
-YEAR END

DEPARTMENT	STAFFING LEVEL		
	DECEMBER 1980	DECEMBER 1981	DECEMBER 1982
PRODUCT DEVELOPMENT	15	25	40
MARKETING	40	85	130
GENERAL AND ADMINISTRATIVE	15	25	40
DIRECT LABOR	20	30	70
INDIRECT MANUFACTURING LABOR	20	30	60
TOTAL LABOR	110	200	340

INPUT

EXHIBIT IV-9

TOTAL STAFFING REQUIREMENTS -
AVERAGE FOR THE YEAR

DEPARTMENT	STAFFING LEVEL			ASSUMED AVERAGE SALARIES
	1980	1981	1982	
PRODUCT DEVELOPMENT	10	20	30	$ 35,000
MARKETING	25	60	100	35,000
GENERAL AND ADMINISTRATIVE	10	20	30	35,000
DIRECT LABOR	15	30	30	20,000
INDIRECT MANUFACTURING LABOR	-	20	40	25,000
TOTAL LABOR	70	150	260	$ 150,000

INPUT

- Planning assumptions in Exhibit IV-10.
- Income statement in Exhibit IV-11.
- Cash receipts and disbursements in Exhibit IV-12.
- Balance sheet in Exhibit IV-13.

- Detailed pro forma financial schedules are shown in Appendix A.

EXHIBIT IV-10

GA/CSI VIDEOFICHE JOINT VENTURE
PRO FORMA FINANCIAL SCHEDULES -
PLANNING ASSUMPTIONS

- REVENUE *

  1980 = $ 6,000,000

  1981 = 13,000,000

  1982 = 25,000,000

- BEGINNING BALANCE

  $1,000,000 INVENTORY

  $1,000,000 EQUITY

- ALL FIXED ASSETS ARE LEASED

- ACCOUNTS PAYABLE

  LABOR - SAME MONTH

  PAYABLES - 30 DAYS

- ACCOUNTS RECEIVABLE - 89 DAYS

- INVENTORY LEVELS

  LABOR AND OVERHEAD - NEXT MONTH'S SHIPMENT

  MATERIAL - NEXT 3 MONTH'S SHIPMENTS

* CONSTANT DOLLARS

INPU

EXHIBIT IV-11

GA/CSI VIDEOFICHE JOINT VENTURE

SUMMARY PRO FORMA INCOME STATEMENT

($ 000)

SCHEDULE	1980		1981		1982	
	($000)	(PERCENT)	($000)	(PERCENT)	($000)	(PERCENT)
REVENUE						
EUROPE	$ 4,500	75%	$ 7,000	54%	$13,000	52%
UNITED STATES	1,500	25	6,000	46	12,000	49
TOTAL REVENUE	$ 6,000	100%	$13,000	100%	$25,000	100%
COST OF SALES						
LABOR	$ 300	5%	$ 500	4%	$ 1,000	4%
MATERIAL	2,600	45	4,700	36	7,600	30
OVERHEAD	600	10	1,040	8	2,000	8
TOTAL COST OF SALES	$ 3,500	60%	$ 6,200	48%	$10,600	42%
GROSS PROFIT	$ 2,500	40%	$ 6,800	52%	$14,600	58%
EXPENSES						
PRODUCT DEVEL.	$ 600	10%	$ 1,300	10%	$ 2,000	8%
MARKETING	1,700	30	3,900	30	7,600	30
GENERAL & ADMIN.	600	10	1,300	10	2,000	8
INTEREST EXPENSE	70	1	200	1	300	1
TOTAL EXPENSES	$ 2,970	51%	$ 6,700	51%	$11,900	47%
OPERATING PROFIT (LOSS)	$ (470)	(8)%	$ 100	1%	$ 3,000	12%
INCOME TAXES	-	-	-	-	1,200	5
NET PROFIT (LOSS)	(470)	(8)	100	1	1,800	7

NOTE: PROJECTIONS BY MONTH ARE AVAILABLE

EXHIBIT IV-12

GA/CSI VIDEOFICHE JOINT VENTURE
SUMMARY PRO FORMA CASH RECEIPTS AND DISBURSEMENTS

RECEIPTS AND DISBURSEMENTS	1980 ($000)	1981 ($000)	1982 ($000)
BEGINNING BALANCE	$ 10	$ 10	$ 10
CASH RECEIPTS			
ACCOUNTS REC.	3,600	11,100	21,400
CASH INVEST.	1,300	1,000	100
BANK LOAN	1,000	900	1,900
TOTAL CASH RECEIPTS	$ 5,900	$ 13,000	$ 23,400
CASH DISBURSED			
PRODUCT DEVELOP.	$ 300	$ 600	$ 1,000
MARKETING	900	2,000	3,800
GENERAL AND ADMINISTRATION	300	600	1,000
LABOR INVENT.	300	500	1,100
O/H INVENTORY LABOR	300	500	1,100
ACCOUNTS PAYABLE	3,700	8,500	15,100
INTEREST PAYABLE	90	200	300
TOTAL CASH DISBURSED	$ 5,890	$ 12,900	$ 23,400
ENDING BALANCE	$ 10	$ 10	$ -

EXHIBIT IV-13

GA/CSI VIDEOFICHE JOINT VENTURE
SUMMARY PRO FORMA BALANCE SHEET

SCHEDULE	1980 ($000)	1981 ($000)	1982 ($000)
ASSETS			
CURRENT ASSETS:			
CASH	$ 10	$ 10	$ 10
ACCOUNTS RECEIVABLE	2,200	4,100	7,900
INVENTORY	1,100	1,500	3,100
TOTAL ASSETS	$ 3,300	$ 5,600	$ 11,000
LIABILITIES			
CURRENT LIABILITIES:			
ACCOUNTS PAY.	$ 600	$ 900	$ 1,700
BANK LOAN	1,000	1,900	3,800
ACCRUED TAXES	-	-	1,100
INTEREST PAY.	10	20	40
TOTAL CURRENT LIABILITIES	$ 1,610	$ 2,820	$ 6,640
STOCKHOLDERS EQUITY:			
CASH INVEST.	$ 1,300	$ 2,300	$ 2,400
CAPITAL	1,000	1,000	1,000
RETAINED EARNINGS, PRIOR	-	(600)	(600)
RETAINED EARNINGS, CURRENT	(600)	80	1,600
TOTAL EQUITY	$ 1,700	$ 2,780	$ 4,400
TOTAL LIAB. & EQUITY	$ 3,300	$ 5,600	$ 11,000

INPUT

APPENDIX A: DETAILED PRO FORMA FINANCIAL SCHEDULES

APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE

PRO FORMA INCOME STATEMENT

$(000)

	JAN 80	FEB 80	MAR 80	APR 80	MAY 80	JUN 80	JUL 80	AUG 80	SEP 80	OCT 80	NOV 80	DEC 80	TOTAL	PERCNT
REVENUE:														
EUROPE	150	250	350	350	350	400	400	400	450	450	450	500	4,500	78
UNITED STATES	-	-	-	-	-	-	100	150	200	200	300	300	1,250	22
TOTAL REVENUE	150	250	350	350	350	400	500	550	650	650	750	800	5,750	100
COST OF SALES:														
LABOR	8	13	18	18	18	20	25	28	33	33	38	40	288	5
MATERIAL	68	113	158	158	158	180	225	248	293	293	338	360	2,588	45
OVERHEAD	15	25	35	35	35	40	50	55	65	65	75	80	575	10
TOTAL COST OF SALES	90	150	210	210	210	240	300	330	390	390	450	480	3,450	60
GROSS PROFIT	60	100	140	140	140	160	200	220	260	260	300	320	2,300	40
EXPENSES:														
PRODUCT DEVELOPMENT	15	25	35	35	35	40	50	55	65	65	75	80	575	10
MARKETING	45	75	105	105	105	120	150	165	195	195	225	240	1,725	30
GENERAL AND ADMINISTR	15	25	35	35	35	40	50	55	65	65	75	80	575	10
INTEREST EXPENSE	1	2	4	5	5	5	6	7	8	9	10	10	71	1
TOTAL EXPENSES	76	127	179	180	180	205	256	282	333	334	385	410	2,946	51
OPERATING PROFIT	(16)	(27)	(39)	(40)	(40)	(45)	(56)	(62)	(73)	(74)	(85)	(90)	(646)	(11)
NET PROFIT	(16)	(27)	(39)	(40)	(40)	(45)	(56)	(62)	(73)	(74)	(85)	(90)	(646)	(11)

INPUT

APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE

PRO FORMA INCOME STATEMENT

$(000)

	JAN 81	FEB 81	MAR 81	APR 81	MAY 81	JUN 81	JUL 81	AUG 81	SEP 81	OCT 81	NOV 81	DEC 81	TOTAL	PERCNT
REVENUE:														
EUROPE	500	500	500	500	500	500	600	600	650	650	700	800	7,000	54
UNITED STATES	400	400	400	450	450	450	500	500	500	600	650	700	6,000	46
TOTAL REVENUE	900	900	900	950	950	950	1,100	1,100	1,150	1,250	1,350	1,500	13,000	100
COST OF SALES:														
LABOR	36	36	36	38	38	38	44	44	46	50	54	60	520	4
MATERIAL	324	324	324	342	342	342	396	396	414	450	486	540	4,680	36
OVERHEAD	72	72	72	76	76	76	88	88	92	100	108	120	1,040	8
TOTAL COST OF SALES	432	432	432	456	456	456	528	528	552	600	648	720	6,240	48
GROSS PROFIT	468	468	468	494	494	494	572	572	598	650	702	780	6,760	52
EXPENSES:														
PRODUCT DEVELOPMENT	90	90	90	95	95	95	110	110	115	125	135	150	1,300	10
MARKETING	270	270	270	285	285	285	330	330	345	375	405	450	3,900	30
GENERAL AND ADMINISTR	90	90	90	95	95	95	110	110	115	125	135	150	1,300	10
INTEREST EXPENSE	12	12	13	13	13	14	14	15	16	17	18	19	176	1
TOTAL EXPENSES	462	462	463	488	488	489	564	565	591	642	693	769	6,676	51
OPERATING PROFIT	6	6	5	6	6	5	8	7	7	8	9	11	84	1
NET PROFIT	6	6	5	6	6	5	8	7	7	8	9	11	84	1

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APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE

PRO FORMA INCOME STATEMENT

$(000)

	JAN 82	FEB 82	MAR 82	APR 82	MAY 82	JUN 82	JUL 82	AUG 82	SEP 82	OCT 82	NOV 82	DEC 82	TOTAL	PERCNT
REVENUE:														
EUROPE	800	800	800	900	1,000	1,100	1,150	1,200	1,300	1,300	1,300	1,350	13,000	51
UNITED STATES	700	700	700	900	900	900	1,000	1,200	1,200	1,200	1,400	1,450	12,250	49
TOTAL REVENUE	1,500	1,500	1,500	1,800	1,900	2,000	2,150	2,400	2,500	2,500	2,700	2,800	25,250	100
COST OF SALES:														
LABOR	60	60	60	72	76	80	86	96	100	100	108	112	1,010	4
MATERIAL	450	450	450	540	570	600	645	720	750	750	810	840	7,575	30
OVERHEAD	120	120	120	144	152	160	172	192	200	200	216	224	2,020	8
TOTAL COST OF SALES	630	630	630	756	798	840	903	1,008	1,050	1,050	1,134	1,176	10,605	42
GROSS PROFIT	870	870	870	1,044	1,102	1,160	1,247	1,392	1,450	1,450	1,566	1,624	14,645	58
EXPENSES:														
PRODUCT DEVELOPMENT	120	120	120	144	152	160	172	192	200	200	216	224	2,020	8
MARKETING	450	450	450	540	570	600	645	720	750	750	810	840	7,575	30
GENERAL AND ADMINISTR	120	120	120	144	152	160	172	192	200	200	216	224	2,020	8
INTEREST EXPENSE	21	21	21	23	25	27	29	31	33	35	37	38	341	1
TOTAL EXPENSES	711	711	711	851	899	947	1,018	1,135	1,183	1,185	1,279	1,326	11,956	47
OPERATING PROFIT	159	159	159	193	203	213	229	257	267	265	287	298	2,689	11
INCOME TAXES	-	-	-	36	104	109	117	131	136	135	147	152	1,066	4
NET PROFIT	159	159	159	157	100	104	112	126	131	130	141	146	1,623	6

INPUT

APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE

PRO FORMA BALANCE SHEET

$(000)

	JAN 80	FEB 80	MAR 80	APR 80	MAY 80	JUN 80	JUL 80	AUG 80	SEP 80	OCT 80	NOV 80	DEC 80
--ASSETS--												
CURRENT ASSETS:												
CASH	10	10	10	10	10	10	10	10	10	10	10	10
ACCOUNTS RECEIVABLE	150	400	745	942	1,038	1,088	1,238	1,437	1,683	1,832	2,028	2,178
INVENTORY	948	850	693	593	690	818	893	998	1,065	1,112	1,106	1,058
TOTAL ASSETS	1,108	1,260	1,448	1,544	1,738	1,916	2,141	2,444	2,758	2,953	3,144	3,246
--LIABILITIES + STOCKHOLDERS EQUITY--												
CURRENT LIABILITIES:												
ACCOUNTS PAYABLE	50	80	105	163	355	418	445	508	555	524	552	560
BANK LOAN	72	192	358	452	498	522	594	690	808	879	974	1,046
INTEREST PAYABLE	1	2	4	5	5	5	6	7	8	9	10	10
TOT CURRENT LIABILI	123	274	466	619	858	945	1,045	1,204	1,371	1,412	1,535	1,616
STOCKHOLDERS EQUITY:												
CASH INVESTMENT	1	29	63	46	41	177	357	564	784	1,012	1,164	1,276
CAPITAL	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
RETAINED EARNINGS CUR	(16)	(43)	(81)	(121)	(161)	(206)	(262)	(324)	(397)	(471)	(555)	(646)
TOTAL EQUITY	985	986	981	925	880	971	1,095	1,240	1,387	1,541	1,609	1,630
TOT LIABILITIES+EQ	1,108	1,260	1,448	1,544	1,738	1,916	2,141	2,444	2,758	2,953	3,144	3,246

INPUT

APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE

PRO FORMA BALANCE SHEET

$(000)

	JAN 81	FEB 81	MAR 81	APR 81	MAY 81	JUN 81	JUL 81	AUG 81	SEP 81	OCT 81	NOV 81	DEC 81
--ASSETS--												
CURRENT ASSETS:												
CASH	10	10	10	10	10	10	10	10	10	10	10	10
ACCOUNTS RECEIVABLE	2,425	2,573	2,670	2,720	2,770	2,818	2,968	3,118	3,313	3,463	3,712	4,058
INVENTORY	1,076	1,094	1,118	1,172	1,226	1,316	1,370	1,466	1,604	1,616	1,598	1,508
TOTAL ASSETS	3,511	3,677	3,798	3,902	4,006	4,144	4,348	4,594	4,927	5,089	5,319	5,576
--LIABILITIES + STOCKHOLDERS EQUITY--												
CURRENT LIABILITIES:												
ACCOUNTS PAYABLE	603	603	605	672	672	696	769	807	878	817	848	885
BANK LOAN	1,164	1,235	1,282	1,306	1,330	1,353	1,425	1,497	1,590	1,662	1,782	1,948
INTEREST PAYABLE	12	12	13	13	13	14	14	15	16	17	18	19
TOT CURRENT LIABILI	1,779	1,851	1,899	1,990	2,014	2,062	2,208	2,319	2,484	2,496	2,647	2,852
STOCKHOLDERS EQUITY:												
CASH INVESTMENT	1,371	1,460	1,527	1,534	1,608	1,694	1,744	1,872	2,033	2,175	2,244	2,285
CAPITAL	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
RETAINED EARNINGS PRI	(646)	(646)	(646)	(646)	(646)	(646)	(646)	(646)	(646)	(646)	(646)	(646)
RETAINED EARNINGS CUR	6	12	17	23	29	34	42	49	56	65	74	84
TOTAL EQUITY	1,732	1,826	1,898	1,911	1,991	2,082	2,140	2,275	2,443	2,593	2,672	2,723
TOT LIABILITIES+EQ	3,511	3,677	3,798	3,902	4,006	4,144	4,348	4,594	4,927	5,089	5,319	5,576

INPUT

APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE

PRO FORMA BALANCE SHEET

$(000)

	JAN 82	FEB 82	MAR 82	APR 82	MAY 82	JUN 82	JUL 82	AUG 82	SEP 82	OCT 82	NOV 82	DEC 82
--ASSETS--												
CURRENT ASSETS:												
CASH	10	10	10	10	10	10	10	10	10	10	10	10
ACCOUNTS RECEIVABLE	4,305	4,450	4,450	4,750	5,150	5,640	5,987	6,483	6,978	7,320	7,617	7,917
INVENTORY	1,598	1,718	1,904	2,021	2,183	2,351	2,486	2,588	2,678	2,867	2,999	3,119
TOTAL ASSETS	5,913	6,178	6,364	6,781	7,343	8,001	8,482	9,081	9,666	10,197	10,625	11,045
--LIABILITIES + STOCKHOLDERS EQUITY--												
CURRENT LIABILITIES:												
ACCOUNTS PAYABLE	945	975	1,017	1,135	1,237	1,296	1,341	1,462	1,515	1,598	1,663	1,696
BANK LOAN	2,066	2,136	2,136	2,280	2,472	2,707	2,874	3,112	3,350	3,514	3,656	3,800
ACCRUED TAXES	-	-	-	36	140	248	365	496	632	767	914	1,066
INTEREST PAYABLE	21	21	21	23	25	27	29	31	33	35	37	38
TOT CURRENT LIABILI	3,032	3,132	3,174	3,474	3,873	4,278	4,608	5,101	5,530	5,914	6,269	6,600
STOCKHOLDERS EQUITY:												
CASH INVESTMENT	2,283	2,289	2,274	2,234	2,297	2,446	2,486	2,465	2,491	2,508	2,440	2,384
CAPITAL	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
RETAINED EARNINGS PRI	(562)	(562)	(562)	(562)	(562)	(562)	(562)	(562)	(562)	(562)	(562)	(562)
RETAINED EARNINGS CUR	159	318	477	634	733	838	950	1,076	1,207	1,336	1,477	1,623
TOTAL EQUITY	2,880	3,045	3,189	3,307	3,469	3,722	3,874	3,980	4,136	4,283	4,356	4,445
TOT LIABILITIES+EQ	5,913	6,178	6,364	6,781	7,343	8,001	8,482	9,081	9,666	10,197	10,625	11,045

INPUT

APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE

PRO FORMA CASH RECEIPTS AND DISBURSEMENTS

$(000)

	JAN 80	FEB 80	MAR 80	APR 80	MAY 80	JUN 80	JUL 80	AUG 80	SEP 80	OCT 80	NOV 80	DEC 80	TOTAL
BEGINNING BALANCE	-	10	10	10	10	10	10	10	10	10	10	10	
---CASH RECEIPTS----													
ACCOUNTS RECEIVABLE	-	-	5	153	253	350	350	352	403	502	553	650	3,572
CASH INVESTMENT	1	28	34	(17)	(5)	136	181	207	220	228	153	111	1,276
BANK LOAN	72	120	166	94	46	24	72	95	118	71	94	72	1,046
TOTAL C/R	73	148	204	231	295	510	603	653	742	801	800	833	5,893
---CASH DISBURSED---													
PRODUCT DEVELOPMENT	8	13	18	18	18	20	25	28	33	33	38	40	288
MARKETING	23	38	53	53	53	60	75	83	98	98	113	120	863
GENERAL AND ADMINIST	8	13	18	18	18	20	25	28	33	33	38	40	288
LABOR INVENTORY	13	18	18	18	20	25	28	33	33	38	40	36	316
O/H INVENTORY LABOR	13	18	18	18	20	25	28	33	33	38	40	36	316
ACCOUNTS PAYABLE	-	50	80	105	163	355	418	445	508	555	524	552	3,753
INTEREST PAYABLE	-	1	2	4	5	5	5	6	7	8	9	10	60
TOTAL C/D	63	148	204	231	295	510	603	653	742	801	800	833	5,883
ENDING BALANCE	10	10	10	10	10	10	10	10	10	10	10	10	

INPUT

APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE

PRO FORMA CASH RECEIPTS AND DISBURSEMENTS

$(000)

	JAN 81	FEB 81	MAR 81	APR 81	MAY 81	JUN 81	JUL 81	AUG 81	SEP 81	OCT 81	NOV 81	DEC 81	TOTAL
BEGINNING BALANCE	10	10	10	10	10	10	10	10	10	10	10	10	
---CASH RECEIPTS----													
ACCOUNTS RECEIVABLE	653	752	803	900	900	902	950	950	955	1,100	1,102	1,153	11,120
CASH INVESTMENT	96	89	67	7	74	85	50	128	161	142	70	41	1,009
BANK LOAN	118	71	46	24	24	23	72	72	94	72	119	166	902
TOTAL C/R	867	912	916	931	998	1,010	1,072	1,150	1,209	1,314	1,291	1,360	13,032
---CASH DISBURSED---													
PRODUCT DEVELOPMENT	45	45	45	48	48	48	55	55	58	63	68	75	650
MARKETING	135	135	135	143	143	143	165	165	173	188	203	225	1,950
GENERAL AND ADMINIST	45	45	45	48	48	48	55	55	58	63	68	75	650
LABOR INVENTORY	36	36	38	38	38	44	44	46	50	54	60	60	544
O/H INVENTORY LABOR	36	36	38	38	38	44	44	46	50	54	60	60	544
ACCOUNTS PAYABLE	560	603	603	605	672	672	696	769	807	878	817	848	8,527
INTEREST PAYABLE	10	12	12	13	13	13	14	14	15	16	17	18	167
TOTAL C/D	867	912	916	931	998	1,010	1,072	1,150	1,209	1,314	1,291	1,360	13,032
ENDING BALANCE	10	10	10	10	10	10	10	10	10	10	10	10	

INPUT

APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE

PRO FORMA CASH RECEIPTS AND DISBURSEMENTS

$(000)

	JAN 82	FEB 82	MAR 82	APR 82	MAY 82	JUN 82	JUL 82	AUG 82	SEP 82	OCT 82	NOV 82	DEC 82	TOTAL
BEGINNING BALANCE	10	10	10	10	10	10	10	10	10	10	10	10	
---CASH RECEIPTS----													
ACCOUNTS RECEIVABLE	1,253	1,355	1,500	1,500	1,500	1,510	1,803	1,903	2,005	2,158	2,403	2,500	21,392
CASH INVESTMENT	(2)	6	(15)	(40)	63	149	40	(20)	26	17	(68)	(56)	99
BANK LOAN	118	70	-	144	192	235	166	238	238	164	142	144	1,852
TOTAL C/R	1,369	1,431	1,485	1,604	1,755	1,894	2,010	2,121	2,268	2,339	2,478	2,588	23,343
---CASH DISBURSED---													
PRODUCT DEVELOPMENT	60	60	60	72	76	80	86	96	100	100	108	112	1,010
MARKETING	225	225	225	270	285	300	323	360	375	375	405	420	3,788
GENERAL AND ADMINIST	60	60	60	72	76	80	86	96	100	100	108	112	1,010
LABOR INVENTORY	60	60	72	76	80	86	96	100	100	108	112	122	1,072
O/H INVENTORY LABOR	60	60	72	76	80	86	96	100	100	108	112	122	1,072
ACCOUNTS PAYABLE	885	945	975	1,017	1,135	1,237	1,296	1,341	1,462	1,515	1,598	1,663	15,069
INTEREST PAYABLE	19	21	21	21	23	25	27	29	31	33	35	37	323
TOTAL C/D	1,369	1,431	1,485	1,604	1,755	1,894	2,010	2,121	2,268	2,339	2,478	2,588	23,343
ENDING BALANCE	10	10	10	10	10	10	10	10	10	10	10	10	

INPUT

APPENDIX A

GA/CSI - VIDEOFICHE JOINT VENTURE
COSTS AS A PERCENT OF REVENUE

	JAN-DEC 80	JAN-DEC 81	JAN-DEC 82
C/S LABOR PCT	5	4	4
C/S MATERIAL PCT	45	36	30
C/S OVRHEAD LAB PCT	5	4	4
C/S OVRHEAD MAT PCT	5	4	4
R+D LABOR PCT	5	5	4
R+D MATERIAL PCT	5	5	4
MARKETING LABOR PCT	15	15	15
MARKETING MATRL PCT	15	15	15
G+A LABOR PCT	5	5	4
G+A MATERIAL PCT	5	5	4
TOTAL	110	98	88

INPU